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Vascular anatomy of Ophioglossaceae.—LANG[24] has been investigating the vascular anatomy of the three genera of Ophioglossaceae, and in advance of the publication of the full papers he has made a brief statement of his conclusions. It is becoming increasingly evident that the Ophioglossaceae are true ferns, and this return to the earlier views as to their relationships is emphasized by the present paper. The critical study of the anatomy of the stem and leaf trace led to the conclusion that there is "an essential similarity in plan of stelar construction between the Ophioglossaceae and the Coenopterideae" (Botryopterideae and Zygopterideae). There are also features in common with the Osmundaceae and Hymenophyllaceae. When one considers the gaps in our knowledge of the extinct forms, it is safer to suggest relationship in a general way than to be too specific, and this attitude LANG has taken. He is convinced, further, that in the Ophioglossaceae a protostele has developed intrastelar pith.—J. M. C.

Vegetative reproduction in Angiopteris.—It has been known for a long time that the leaf stalk of *Angiopteris* is differentiated into two regions, a basal portion bearing stipules, and a midrib bearing pinnae, the two regions being separated by an abscission layer. From material in the garden and from a study of large specimens in the forest, VAN LEEUWEN[25] records the following observations: the foliage leaf persists for about two or three years and then breaks off at the abscission layer, the leaf base remaining many years longer; after the leaf has fallen, four resting buds appear on the leaf base, and when it finally falls off, one or more of the buds begin to grow and many develop into new plants.

RACIBORSKI first noticed such buds in *Angiopteris;* the present account gives additional information from plants growing under natural conditions.—CHARLES J. CHAMBERLAIN.

Fossil prothallia.—MCLEAN[26] has added to our meager knowledge of paleozoic prothallia by describing two female prothallia from the Lower Coal Measures of England. One is that of the classic *Lagenostoma Lomaxii*, and it resembles closely the female gametophyte of modern gymnosperms, the radial arrangement of the tissues suggesting centripetal growth by "alveoli." This radial arrangement is lacking in such a gametophyte as that of *Lepidocarpon*. The other gametophyte is that of *Bothrodendron*, one of the lycopods. It is extremely well preserved, and strongly resembles the emergent and flaring gametophyte of the water ferns, with the archegonia developed outside the spore. Since the female gametophyte of *Lepidocarpon* remains entirely within the megaspore, that of *Bothrodendron* represents a more primitive condition, in which the gametophyte is partly free from its spore.—J. M. C.

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[24] LANG, WILLIAM H., On the interpretation of the vascular anatomy of the Ophioglossaceae. Mem. and Proc. Manchester Lit. and Phil. Soc. **56:** no. 12 (pp. 14). *figs. 6.* 1912.

[25] VAN LEEUWEN, W. DOCTERS, Über die vegetative Vermehrung von *Angiopteris evecta* Hoffm. Ann. Jard. Bot. Buitenzorg **10:** 202–209. *pl. 18.* 1912.

[26] MCLEAN, R. C., Two fossil prothalli from the Lower Coal Measures. New Phytol. **11:** 305–318. *figs. 2. pls. 5, 6.* 1912.

Cold air drainage.—In investigating the physical factors influencing the distribution of vegetation in the Santa Catalina Mountains, SHREVE[27] has found important differences in the temperature limits of stations at similar altitudes, but differently related to the ridges and valleys of the mountain slopes. These differences are shown to be due to valleys and cañons being frequently occupied by a stream of cooled air, and to amount to a difference in the mean minimum temperature equivalent to that usually experienced with an increase in altitude of 2350 feet. The influence of this cold air drainage seems to be most important in its effect upon the upward distribution of lowland species, and will do much to account for the higher range of these species upon the ridges and upper slopes of cañons.—GEO. D. FULLER.

Botryopterideae.—LIGNIER[28] has investigated *Stauropteris Oldhamia*, and its relations to the Botryopterideae, which he prefers to call Coenopterideae. Following the theory of the meriphyte, and including the sporangial structures, he reaches the conclusion that *Stauropteris* does not belong to the Coenopterideae, which represent an advanced group, but very near to the more primitive Primofilices. Incidentally he presents a "genealogical tree," which indicates that the Primofilices have given rise to three lines: (1) to the Coenopterideae (Botryopterideae) through *Stauropteris* as a start; (2) to the Marattiaceae through *Archaeopteris* and *Botrychium*, with a possible side branch leading to the Leptosporangiates; (3) to the Pteridosperms (Cycadofilicales).—J. M. C.

Standardizing atmometers.—The difficulties involved in subjecting a considerable number of atmometer cups to exactly similar conditions of temperature, humidity, and air movement for the period of time necessary for their standardization has caused LIVINGSTON[29] to devise a table rotating once per minute by means of a small electric motor belted to a reducing gear. The cups, mounted in suitable bottles, are placed near the outer margin of the table, and should a very high rate of evaporation be required an electric fan is made to furnish a current of air crossing the table. As the efficiency of the atmometer is largely dependent upon the accuracy of its standardization this device will prove helpful to ecological workers.—GEO. D. FULLER.

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[27] SHREVE, FORREST, Cold air drainage. Plant World **15**:110–115. 1912.

[28] LIGNIER, O., Le *Stauropteris Oldhamia* Binney et les Coenoptéridées à la lumière de la théorie du mériphyte. Bull. Soc. Bot. France **59**:1–33. *figs. 11.* 1912.

[29] LIVINGSTON, B. F., A rotating table for standardizing porous cup atmometers. Plant World **15**:157–162. 1912.